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(71) Applicant
Bayer Aktiengesellschaft

(Incorporated in the Federal Republic of Germany)

**5090 Leverkusen, Bayerwerk,
Federal Republic of Germany**

(72) Inventor
Jürgen Haverbier

(74) Agent and/or Address for Service
**Carpmaels and Ransford
43 Bloomsbury Square, London, WC1A 2RA,
United Kingdom**

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(56) Documents cited
**GB 1425237 A GB 1199675 A
Derwent Abstract no 87-295573/42 & JP-A-62/207371
(Nippon Kayaku)**

(58) Field of search
**UK CL (Edition K) C4P PCB PP
WPI**

(54) **Production of dyestuff granules and pellets**

(57) Abrasion-resistant, low-dust dyestuff granules in cylindrical form are obtained by subjecting dyestuff powders having a water content of 5-15 % by weight to extrusion granulation. The cylindrical pellets preferably have a diameter of 1 to 3 mm and a length of 2 to 15 mm.

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10 Process for the production of dyestuff granules

15 The present invention relates to the production of dyestuff granules in cylindrical form which, in addition to the dyestuff, optionally contain dispersing agents, extenders, dedusting agents, emulsifiers, granulating liquid and the like.

20 The cylindrical pellets preferably have a diameter of 1 to 3 mm and a length of 2 to 15 mm. Particularly preferred pellets have a diameter of about 2 mm and a length of 5 to 10 mm.

25 In factories where dyestuffs are used, for example in the textile industry, dyestuffs of the most diverse kinds are required. The dyestuffs are predominantly used in the form of powders. This does however have various disadvantages. The greatest disadvantage is the in some
30 cases extensive development of dust from the powder, added to which it is very difficult to disperse and dissolve powder in water because it spreads poorly and tends to form lumps. In addition, powder cannot be used

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5 for metering units and has a high packing volume because
of its relatively low bulk density.

10 If the dyestuff is processed into granules a number of
advantages result. The granules, for example, cylindrical
pellets, can be easily strewn into the water present
in the vessel employed and dissolve or become dispersed
within a short period of time without lump formation or
adherence to the vessel walls. The pellets are ideally
suitable for metering units since they have good flow
properties and ideal metering properties, do not stick
15 to each other and do not adhere to silo walls. The bulk
density is 1.5 to 2 times greater than that of powder,
thus resulting in a considerable saving in packaging.

20 Further advantages over the powder form and other
granulating processes are:

- low investment costs
- small amount of space required for the extrusion unit
- high production capacity
- 25 - minimal maintenance costs
- rapid product changeover
- low manpower requirements
- low energy costs
- no variation in product quality
- 30 - no lump formation

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5 The disadvantage of the known cylindrical pellets is
their low abrasion resistance which results, inter alia,
in undesired dust formation;

10 It has now been found that these disadvantages can be
avoided if dyestuff powders having a specific degree of
residual moisture are extrusion-granulated.

15 The invention therefore relates to a process for the
production of dyestuff granules in cylindrical form,
characterised in that dyestuff powders having a water
content of 5-10, preferably 7-12 % by weight, are sub-
jected to extrusion granulation.

20 The dyestuffs contained in the granules according to the
claims can belong to the most diverse classes, such as,
for example, azo dyestuffs, anthraquinone dyestuffs,
triphenylmethane dyestuffs, sulphur dyestuffs, pigment
dyestuffs, methine dyestuffs and triarylmethane
dyestuffs.

25 Water-soluble dyestuffs, for the textile, paper and
leather industry are preferred. Reactive dyestuffs and
non-reactive acid dyestuffs are particularly preferred.

30 Suitable dispersing agents which can be contained in the
dyestuff preparations are: surfactants from the group
comprising condensed aromatic sulphonic acids, such as,
for example, naphthalenesulphonic acid/formaldehyde con-
densates, and lignin sulphonates etc. (cf. for example
DE-A 2,317,175).

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5 Suitable extenders are preferably inorganic salts such
as, for example, sodium, magnesium and potassium
sulphate, sodium and potassium chloride, monosodium and
disodium phosphate and borax.

10 Dedusting agents which may be mentioned are: dibutyl
phthalate, dimethyl phthalate, fatty alcohols, poly-
ethers and mineral oils.

15 Suitable emulsifiers are alkoxyated fatty alcohols and
amines.

The preferred granulating liquid is water.

20 The cylindrical granules have, for example, the
following composition:

1. Acid dyestuff types

25 65.0 - 75.0 % of dyestuff
0.0 - 10.0 % of extenders
0.4 - 0.8 % of dedusting agents
0.1 - 0.2 % of emulsifier and
10.0 - 15.0 % of water

2. Reactive dyestuff types

30 30.0 - 85.0 % of dyestuff
0.0 - 60.0 % of dispersing agents
0.0 - 60.0 % of extenders
0.4 - 1.2 % of dedusting agents
0.1 - 0.3 % of emulsifiers and
35 10.0 - 15.0 % of water,

the sum of the constituents in each case being 100% by
5 weight.

The starting materials for the production of the pellets
are dyestuffs in powder form which form a slight to
small degree of dust. The powders are obtained, for
10 example, by spray-drying the aqueous filter cakes to
which auxiliaries have optionally been added.

Flat die presses manufactured by Amadeus KAHL GmbH &
Co., D-2057 Reinbek bei Hamburg, have proven to be
15 suitable machines for carrying out the process.

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Description of the process

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The KAHL press operates according to the process of extrusion agglomeration with the aid of a flat die and rollers as the pressing tools. The dyestuff powder is metered vertically from above into the press chamber and
10 forms a layer of material on the die. The rollers roll over and compact this layer. The compressive force increases constantly as the rollers roll in the direction of the press channel until it has become so high that the product is pressed by the rotating rollers
15 through the nozzle grid = die and is shaped to form endless strands of uniform density. The adjustable cutting device below the die cuts the shaped strands to the desired length. It is not generally necessary to subsequently dry the pellets.

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The process can be used both continuously and discontinuously.

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It will be understood that the invention has been described above purely by way of example, and that various modifications of detail can be made within the ambit of the invention.

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Patent Claims

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1. Process for producing dyestuff granules in cylindrical form, characterised in that dyestuff powders having a water content of 5-15% by weight are subjected to extrusion granulation.

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2. Process according to Claim 1, characterised in that the cylindrical pellets have a diameter of 1 to 3 mm and a length of 2 to 15 mm.

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3. Process according to Claim 1, characterised in that the extrusion granulation is carried out using a flat die.

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4. Process for producing dyestuff pellets in cylindrical form, characterised in that dyestuff powders having a water content of 5-15% by weight are subjected to extrusion agglomeration and the shaped strands are cut to the desired length without subsequent drying.

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5. Any one of the processes according to claim 1, substantially as hereinbefore specifically described.

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